As natural gas production grows, questions arise about methane leaks

By Renee Schoof — McClatchy Newspapers

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WASHINGTON — As natural gas production in the United States hits an all-time high, a major unanswered question looms: What does growing hydraulic fracturing mean for climate change?

The Obama administration lists natural gas as one of the "clean energy sources" it wants to expand. When burned, natural gas emits about half the heat-trapping carbon dioxide as coal. Yet natural gas production can result in releases of methane into the atmosphere.

Methane, the primary component of natural gas, is 25 times more potent as a greenhouse gas than carbon dioxide. Methane can enter the atmosphere when gas is stored or transported, but it's particularly a concern with shale gas production during flowback — when fracking fluids, water and gases flow out of a well after drilling but before the gas is put into pipelines.

Companies often burn or capture the methane during flowback. How extensively or effectively that's done overall, however, isn't clear.

The oil and gas industry is the biggest source of U.S. methane emissions, accounting for about 40 percent, according to the Environmental Protection Agency. Industry says that figure is inflated, because equipment is widely used to keep methane from entering the air.

It's generally agreed, however, that there isn't good data on how much methane is entering the atmosphere from natural gas operations.

"Even small leaks can wind up undoing most of the global warming benefit we think we're getting when we substitute natural gas for coal," said Mark Brownstein, who leads the natural gas and oil team at the Environmental Defense Fund.

"We can continue to debate what the leak rates are. Or let's get the data and let's fix the leaks and move on," he said.

EDF plans to work with Southwestern Energy, Shell and other energy companies involved in natural gas production to measure methane emissions in shale gas fields around the country, and in processing and distribution. The environmental group isn't opposed to fracking, but wants to reduce the methane releases as a way to fight climate change.

Mark K. Boling, executive vice president and general counsel of Southwestern Energy, said it's well known that there are methane emissions from the natural gas industry and ways to reduce them.

"What we don't know — and this is sort of putting the cart before the horse — is what the actual emission levels are," he said.

The Environmental Protection Agency has the main estimate of the rate of methane emissions. Industry groups say it's too high.

By contrast, a study by Robert Howarth and colleagues at Cornell University released last April, which has stirred up much controversy, said the EPA's estimate was far too low. Howarth said that shale gas had higher greenhouse gas emissions than coal and wasn't suitable as a "bridge fuel" to cleaner energy.

Other studies since then have disagreed with that assessment. But Howarth and the other scientists have agreed that better data on the actual emissions are needed.

A shale gas committee set up to advise the Department of Energy last year made the same case.

And the White House also has agreed that not enough is known about the effects of fracking on climate change.

"Many factors affect the greenhouse gas footprint of natural gas production, including gas well productivity and whether methane produced during well completion is captured, flared, or vented," said Steve Fetter, principal assistant director for energy at the White House Office of Science and Technology Policy.

"Although our understanding and measurement of these factors is improving, more research is needed to further shrink the uncertainty surrounding natural gas production's greenhouse gas footprint, and the administration is supporting a number of such studies right now."

Those studies, however, don't include any immediate efforts to measure methane emissions. They include a proposal to spend $45 million next year to study shale gas and its environmental issues, including methane. In addition, the National Energy Technology Laboratory plans a case study at a drilling site in Pennsylvania that looks at all environmental impacts.

The EPA isn't directly measuring methane emissions from fracking, either. However, it will require oil and gas companies to submit data on their greenhouse gas emissions later this year for the first time.

The EDF and industry study will provide another source of measurement information, but it isn't ready yet, Brownstein said.

During flowback, one way to greatly reduce methane emissions is to burn it. However, when the flow of gas is sporadic or low, it can be difficult to keep the flare going and the gas is vented to the atmosphere instead, IHS Cambridge Energy Research Associates said in a report last year.

The energy consulting company's report noted that flowback water also contains some dissolved methane. When this water is pumped into open pits, the methane can evaporate into the atmosphere. Companies increasingly are using enclosed tanks instead of pits, and venting is sometimes done to release pressure in storage vessels, the report said.

The report said that companies increasingly use a practice known as "reduced emissions completions" to prevent methane leaks. Equipment used for this procedure separates gas and liquid hydrocarbons from the flowback fluid so that they can be sold. America's Natural Gas Alliance, an industry group, has reported that this equipment is routinely used.

The EPA is under court order to release a rule on April 3 that would require this and other equipment that would keep air pollutants out of the atmosphere. The agency estimates that these measures would reduce methane emissions by 26 percent. It also estimates that companies would see a net savings of about $30 million a year because less gas would be wasted.

The American Petroleum Institute, the industry lobbying group, opposes the rule and says the cost to industry would be much higher than what the EPA figures. Howard Feldman, API's director of scientific and regulatory affairs, said that the rules were overly burdensome and "a waste of time and resources."

Feldman said his group didn't have its own estimate of methane emissions but was "pretty confident" that EPA overestimated them.

Some companies say they're already using the equipment the EPA wants to require.

"What we found is in the last couple years the technology has evolved quite a bit," said Matt Pitzarella, a spokesman for Range Resources of Fort Worth, Texas, a company that operates mainly in Pennsylvania.

Range has equipment that either captures or burns methane. It also uses monitors that detect leaks.

Pitzarella said the company's efforts to avoid venting methane reduce the risk of fire and costly shutdowns. He said the technological advances have lowered the rate of emissions below the EPA's estimate, but added that the company supports additional research.

"We've seen very little emissions," he said.

"From our economic analysis, there are some additional expenses, but from a safety and cost perspective we think it makes sense," he said.

Read more here: http://www.kentucky.com/2012/03/18/2116357/as-natural-gas-production-grows.html#storylink=cpy